

## A NEW SPECIES OF *LEPTONEMA* OF THE *OCCIDENTALE* GROUP (TRICHOPTERA: HYDROPSYCHIDAE) FROM MADAGASCAR<sup>1</sup>

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**ABSTRACT:** *Leptonema ranomafana* new species, a member of the *occidentale* group, is described from the Ranomafana National Park in Madagascar. Eight species were previously recognized from the island, all belonging to the endemic *affine* group. The *occidentale* group had been known from 5 species recorded from Ghana south and east through central Africa to Natal. The Madagascan species agrees closely with its group, but is easily recognized by the structure of the tenth tergum and phallus.

The hydropsychid genus *Leptonema* is known from the Greater Antilles, South and Central America (97 species), Africa (12 species) and Madagascar (8 species). It was first monographed by Mosely (1933; 37 species) and then again by Flint, McAlpine and Ross (1987; 105 species), subsequently Flint (1991) and Muñoz-Quesada (1997) have added another 6 species from the New World. Very recently Chvojka and Sykora (1998) reviewed the Madagascan species recognizing two more species, but all in the endemic *affine* species group. No species other than those in this species group have been reported from the island.

In 1988 and 1990 Mr. Warren E. Steiner, Jr. of the Entomology Department, Smithsonian Institution, collected insects as part of the Duke-Malagasy biotic survey of the Ranomafana National Park. On both of these years he collected a comparatively small, dark macronematine hydropsychid that on study turned out to be an undescribed species belonging, not to the *Leptonema affine* group, but to the *occidentale* group. This latter group contained 5 previously described species, distributed from Ghana on the west, south and east through the Cameroons and Zaire to Natal in the southeast. The discovery of a sixth species on the island of Madagascar was wholly unexpected.

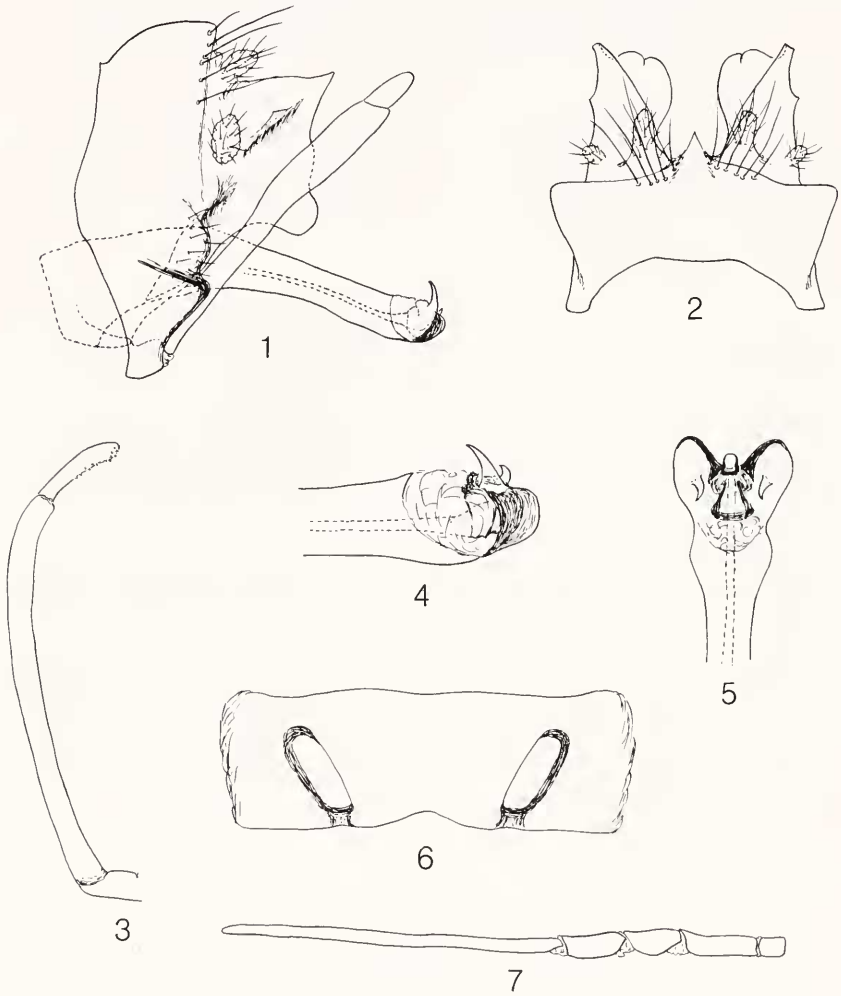
### *Leptonema ranomafana* Flint, NEW SPECIES

Figures 1-7

This new species is a typical member of the *occidentale* group, conforming well to the group characteristics (Flint et al. 1987). It is, perhaps, most closely related to *L. marlieri* Flint, McAlpine and Ross based on the presence of an apicodorsal process from the tip of the phallus. It is easily distinguished from this species, and all others in the group, by the presence of an elongate

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Figures 1-7. *Leptonema ranomafana* n. sp., male structures. 1, genitalia, lateral; 2, ninth and tenth terga dorsal; 3, inferior appendage, posteroventral; 4, apex of phallus, lateral; 5, apex of phallus, dorsal; 6, fifth sternum, ventral; 7, maxillary palpus, lateral.

wart *a* and development of a large apicoventral lobe on the tenth tergum, the very long, slender basal segment of the inferior appendage, and the details of the structures at the apex of the phallus.

**Male:** Length of forewing 10-11 mm. Color fuscous, venter and legs stramineous. Fourth segment of maxillary palpus longer than third, fifth segment 1.6 times longer than basal 4 segments combined (Fig. 7). Foretibia with a single apical spur. Fifth sternal lobes elongate-ovoid, set obliquely, about 2/3 width of sternum (Fig. 6). Male genitalia: Tenth tergum with wart *a* well developed, elongate, terete, wart *c* ovoid, protuberant; lateral lobe broad, with a small, obliquely set point laterally, apicodorsal tip slightly upturned, posterior margin strongly produced ventrad into a large, rounded lobe (Figs. 1, 2). Inferior appendage with basal segment very long, slender, lacking processes; apical segment less than 1/4 length of basal segment with spinose setae on inner margin (Fig. 3). Phallus with basal section enlarged, set at a slight angle to stem; apex separated from stem by a membranous region; with rounded apicolateral lobe and reflexed dorsolateral point, apicodorsal opening small, dorsal rim produced into a small point in lateral aspect, phallosomal complex situated centrally (Figs. 4, 5).

**Female:** Length of forewing 8-10 mm. Color fuscous, as in male.

**Material Examined:** Madagascar, Prov. Fianarantsoa, 7 km W Ranomafana, 1100m, 1-7 Nov 1988, W.E. Steiner, Holotype, male, NMNH. Paratypes: Same data, 16♂; same, but 8-21 October 1988, 17♂, 1♀; same, but 17-22 February 1990, 13♂; same, but 22-31 October 1988, 12♂; same, but Malaise trap in small clearing, montane rain forest, 1♀; same, but flight intercept-yellow pan trap in Malaise trap in small clearing, montane rainforest, 1♂, 1♀; same, but 1-7 Nov 1988, 2♀; same, but 1000m, 26-29 January 1990, Malaise trap across stream, montane rain forest, 1♂, 1♀; same, but 900m, 1-7 March 1990, Malaise trap in small clearing, montane rain forest, 1♀; same, but 8-13 March 1990, Malaise trap across stream, montane rain forest, 3♂, 4♀; same, but 20-24 March 1990, Malaise trap across stream, montane rain forest, 5♂, 6♀. 7km W Ranomafana, 1100m, 7-14 Sept 1988, C. Kremen, 4♂; Holotype and many paratypes in the NMNH; paratypes will be deposited in the British Museum, London, England; Muséum National d'Histoire Naturelle, Paris, France; Albany Museum, Grahamstown, South Africa; Musée Royal de l'Afrique Central, Belgium.

**Biology:** The immature stages of this species have not been associated. Adults were taken both by net and in Malaise traps. Those without an accessory label were mostly taken by net as they swarmed over the stream in the evening (Steiner, pers. com.).

**Etymology:** The name *ranomafana* is taken from the name of the national park and treated as a noun in apposition. Its meaning is "hot water", an allusion to the hot springs in the town of Ranomafana.

#### ACKNOWLEDGMENTS

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## LITERATURE CITED

- Chvojka, Pavel and Jan L. Sykora.** 1998. Revision of the *Leptonema affine* group (Insecta: Trichoptera: Hydropsychidae) from Madagascar with the description of a new species. Cas. Nár. Muz. Rada Přírodoved. 167:25-33.
- Flint, Oliver S., Jr.** 1991. Studies of Neotropical Caddisflies, XLV: The Taxonomy, Phenology, and Faunistics of the Trichoptera of Antioquia, Colombia. Smithson. Contrib. Zool. 520:1-113.
- Flint, Oliver S., Jr., J. Frank McAlpine and Herbert H. Ross.** 1987. A Revision of the Genus *Leptonema* Guérin (Trichoptera: Hydropsychidae: Macronematinae). Smithson. Contrib. Zool. 450: 1-193.
- Mosely, Martin E.** 1933. *A Revision of the Genus Leptonema*. 69 pages. London: Br. Mus. (Nat. Hist.).
- Muñoz-Quesada, Fernando.** 1997. Five new species and a new record of Costa Rican *Leptonema* Guérin (Trichoptera: Hydropsychidae). Proc. Entomol. Soc. Wash. 99:115-132.